

FEATURES

- **Miniature size (33×15.9×10.3 mm)**
 - **Sealed construction for use in adverse environment-Sealed construction by epoxy resin and rubber cap greatly reduces possible miscontact due to contaminants such as dust. Conforming to IP67* of IEC protective construction classification**
 - **Elastomer double molding technology, an industry first and ultrasonic swaging technology contribute to uniform sealing in high production quantities**
 - **UL/CSA/VDE/SEMKO approved**
- * Based on the protective construction classification of IED, items which satisfy the test requirements are denoted with an IP designation.

TYPICAL APPLICATIONS

- **Automotive**
- **Agricultural devices**
- **Industrial equipment**

Compliance with RoHS Directive

ORDERING INFORMATION

Ex. **ABV1** **2** **1** **0** **4** **1** **3** **R**

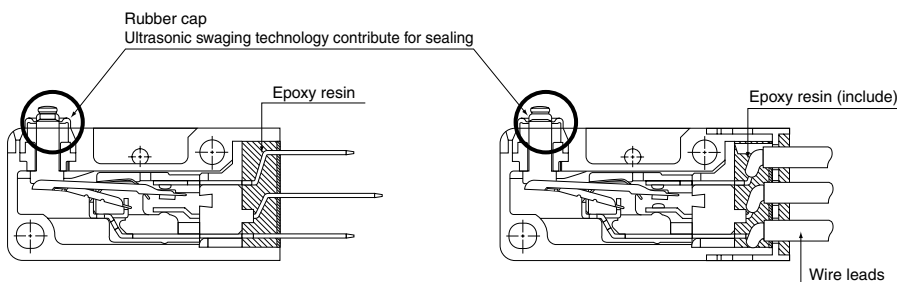
| Type of switch | Terminal | Contact arrangement | Actuator | Operating force by pin plunger (max.) | Contact | Agency standard | Short roller lever |
|-------------------------------|---|-------------------------------------|---|---------------------------------------|--|---------------------|--------------------------------|
| ABV1: Turquoise switch V type | 2: .187 quick-connect terminal 6: Wire leads | 1: SPDT 2: SPST-NC 3: SPST-NO | 0: Pin plunger 2: Hinge lever 4: Simulated roller lever 5: Short roller lever 6: Roller lever | 4: 0.98 N 5: 1.96 N | 0: AgNi alloy 1: AgNi alloy + Au clad | 3: UL/CSA/VDE/SEMKO | R: Improved short roller lever |

Remarks: 1. Standard packing: Dust protected type 50 pcs./carton, 500 pcs./case; Immersion protected type 50 pcs./case.
2. Not every combination is available. Please refer to the following table, "PRODUCT TYPES".

CONSTRUCTION

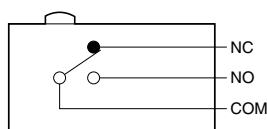
.187 quick-connect terminal

Wire leads

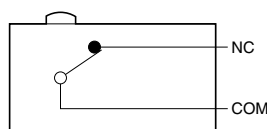


CONTACT ARRANGEMENT

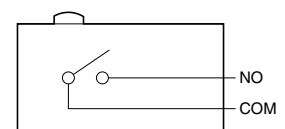
1. SPDT



2. SPST-NC

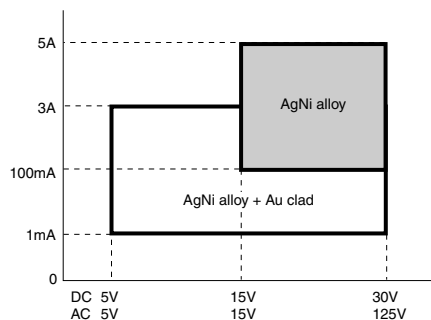


3. SPST-NO



ABV1

APPLICABLE CURRENT RANGE (Reference only)



PRODUCT TYPES

AgNi alloy

| Contact | Actuator | Contact Arrangement | Operating force, Max. | 187 Quick-connect terminal | Wire Leads |
|--------------|------------------------|---------------------|-----------------------|----------------------------|-------------|
| AgNi alloy | Pin plunger | SPDT | 0.98 N | ABV1210403 | ABV1610403 |
| | | | 1.96 N | ABV1210503 | ABV1610503 |
| | | SPST-NC | 0.98 N | ABV1220403 | ABV1620403 |
| | | | 1.96 N | ABV1220503 | ABV1620503 |
| | | SPST-NO | 0.98 N | ABV1230403 | ABV1630403 |
| | | | 1.96 N | ABV1230503 | ABV1630503 |
| | Hinge lever | SPDT | 0.59 N | ABV1212403 | ABV1612403 |
| | | | 1.18 N | ABV1212503 | ABV1612503 |
| | | SPST-NC | 0.59 N | ABV1222403 | ABV1622403 |
| | | | 1.18 N | ABV1222503 | ABV1622503 |
| | | SPST-NO | 0.59 N | ABV1232403 | ABV1632403 |
| | | | 1.18 N | ABV1232503 | ABV1632503 |
| | Simulated roller lever | SPDT | 0.59 N | ABV1214403 | ABV1614403 |
| | | | 1.18 N | ABV1214503 | ABV1614503 |
| | | SPST-NC | 0.59 N | ABV1224403 | ABV1624403 |
| | | | 1.18 N | ABV1224503 | ABV1624503 |
| | | SPST-NO | 0.59 N | ABV1234403 | ABV1634403 |
| | | | 1.18 N | ABV1234503 | ABV1634503 |
| | Short roller lever | SPDT | 1.08 N | ABV1215403R | ABV1615403R |
| | | | 2.16 N | ABV1215503R | ABV1615503R |
| | | SPST-NC | 1.08 N | ABV1225403R | ABV1625403R |
| | | | 2.16 N | ABV1225503R | ABV1625503R |
| | | SPST-NO | 1.08 N | ABV1235403R | ABV1635403R |
| | | | 2.16 N | ABV1235503R | ABV1635503R |
| Roller lever | SPDT | 0.59 N | ABV1216403 | ABV1616403 | |
| | | 1.18 N | ABV1216503 | ABV1616503 | |
| | SPST-NC | 0.59 N | ABV1226403 | ABV1626403 | |
| | | 1.18 N | ABV1226503 | ABV1626503 | |
| | SPST-NO | 0.59 N | ABV1236403 | ABV1636403 | |
| | | 1.18 N | ABV1236503 | ABV1636503 | |

AgNi alloy + Au clad

| Contact | Actuator | Contact Arrangement | Operating force, Max. | 187 Quick-connect terminal | Wire Leads |
|----------------------|------------------------|---------------------|-----------------------|----------------------------|-------------|
| AgNi alloy + Au clad | Pin plunger | SPDT | 0.98 N | ABV1210413 | ABV1610413 |
| | | | 1.96 N | ABV1210513 | ABV1610513 |
| | | SPST-NC | 0.98 N | ABV1220413 | ABV1620413 |
| | | | 1.96 N | ABV1220513 | ABV1620513 |
| | | SPST-NO | 0.98 N | ABV1230413 | ABV1630413 |
| | | | 1.96 N | ABV1230513 | ABV1630513 |
| | Hinge lever | SPDT | 0.59 N | ABV1212413 | ABV1612413 |
| | | | 1.18 N | ABV1212513 | ABV1612513 |
| | | SPST-NC | 0.59 N | ABV1222413 | ABV1622413 |
| | | | 1.18 N | ABV1222513 | ABV1622513 |
| | | SPST-NO | 0.59 N | ABV1232413 | ABV1632413 |
| | | | 1.18 N | ABV1232513 | ABV1632513 |
| | Simulated roller lever | SPDT | 0.59 N | ABV1214413 | ABV1614413 |
| | | | 1.18 N | ABV1214513 | ABV1614513 |
| | | SPST-NC | 0.59 N | ABV1224413 | ABV1624413 |
| | | | 1.18 N | ABV1224513 | ABV1624513 |
| | | SPST-NO | 0.59 N | ABV1234413 | ABV1634413 |
| | | | 1.18 N | ABV1234513 | ABV1634513 |
| | Short roller lever | SPDT | 1.08 N | ABV1215413R | ABV1615413R |
| | | | 2.16 N | ABV1215513R | ABV1615513R |
| | | SPST-NC | 1.08 N | ABV1225413R | ABV1625413R |
| | | | 2.16 N | ABV1225513R | ABV1625513R |
| | | SPST-NO | 1.08 N | ABV1235413R | ABV1635413R |
| | | | 2.16 N | ABV1235513R | ABV1635513R |
| | Roller lever | SPDT | 0.59 N | ABV1216413 | ABV1616413 |
| | | | 1.18 N | ABV1216513 | ABV1616513 |
| | | SPST-NC | 0.59 N | ABV1226413 | ABV1626413 |
| | | | 1.18 N | ABV1226513 | ABV1626513 |
| SPST-NO | | 0.59 N | ABV1236413 | ABV1636413 | |
| | | 1.18 N | ABV1236513 | ABV1636513 | |

ABV1

SPECIFICATIONS

1. Contact rating

| Type | Standard rating | Low-level rating |
|------------------------------|--|---|
| AgNi alloy + Au clad contact | 3 A 250 V AC (O.F. 1.96 N) 1 A 250 V AC (O.F. 0.98 N) | 5 mA 6 V DC 2 mA 12 V DC 1 mA 24 V DC |
| AgNi alloy | 5 A 250 V AC (O.F. 1.96 N) 3 A 250 V AC (O.F. 0.98 N) | — |

2. Characteristics

| | | |
|---|--|---|
| Mechanical life (O.T.: Specified value) | | Min. 5×10^6 (at 60 cpm) |
| Electrical life | Nominal rating (O.T.: Max.) | Min. 10^5 (at 20 cpm)*1 |
| | Low-level rating (O.T.: Specified value) | Min. 10^6 (at 20 cpm) |
| Insulation resistance | | Min. 100 M Ω (at 500 V DC insulation resistance meter) |
| Dielectric strength | | |
| Between non-continuous terminals | | 1,000 Vrms |
| Between each terminal and other exposed metal parts | | 2,000 Vrms |
| Between each terminal and ground | | 2,000 Vrms |
| Vibration resistance | | 10 to 55 Hz at single amplitude of 0.75 mm (Contact opening: max. 1 msec.) |
| Shock resistance | | Min. 294 m/s ² (Contact opening: Max. 1 msec.) |
| Contact resistance | AgNi alloy contact type | Dust protected type (IP50): Max. 50 m Ω Immersion protected type (IP67): Max. 100 m Ω (By voltage drop 1 A 6 to 8 V DC) |
| | AgNi alloy + Au clad contact type | Dust protected type (IP50): Max. 50 m Ω Immersion protected type (IP67): Max. 100 m Ω (By voltage drop 0.1 A 6 to 8 V DC) |
| Allowable operating speed (at no load) | | 1 to 500 mm/sec. |
| Max. operating cycle rate (at no load) | | 120 cpm |
| Ambient temperature (at no load) | | -40°C to +85°C |
| Unit weight | | Approx. 7 g (IP50 type) |

Note: *1 O.F. 0.98N type is Min 5×10^5 (at 20 com)

3. Operating characteristics

| Type of actuator | Operating force, Max. | | Release force, Min. | | Pretravel, Max. mm | Movement differential, Max. mm | Overtravel, Min. mm | Operating position, mm |
|------------------------|-----------------------|-------|---------------------|--------|--------------------|--------------------------------|---------------------|------------------------|
| Pin plunger | 1.96N | 0.98N | 0.39N | 0.25N | 1.6 | 0.4 | 0.8 | 14.7±0.6 |
| Hinge lever | 1.18N | 0.59N | 0.13N | 0.098N | 3.2 | 1.2 | 1.2 | 15.3±1.2 |
| Simulated roller lever | 1.18N | 0.59N | 0.13N | 0.098N | 3.2 | 1.2 | 1.2 | 18.5±1.2 |
| Short roller lever | 2.16N | 1.08N | 0.39N | 0.20N | 1.6 | 0.5 | 0.8 | 20.7±0.8 |
| Roller lever | 1.18N | 0.59N | 0.13N | 0.098N | 3.2 | 1.2 | 1.2 | 20.7±1.2 |

(): Low force type

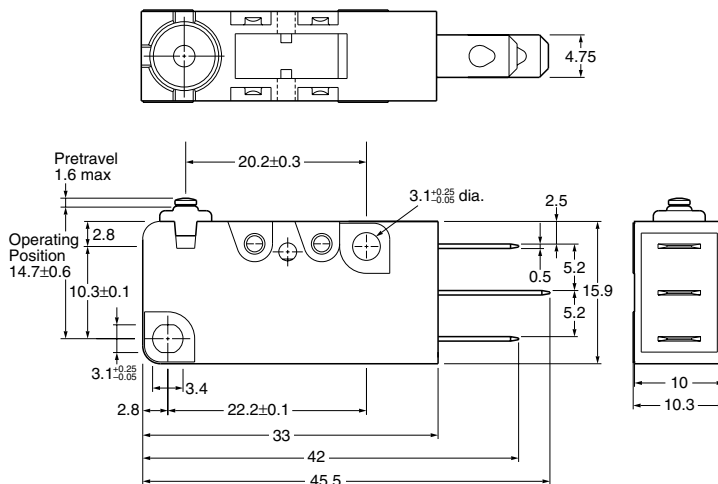
DIMENSIONS

mm General tolerance: ±0.4

1. Dust protected type

1-(1) .187 quick-connect terminal

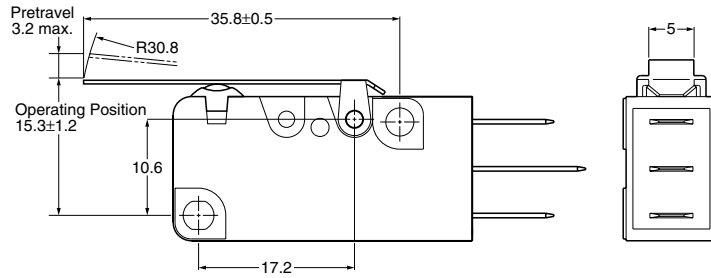
Pin plunger



| | |
|--------------------------------|----------|
| Pretravel, Max. mm | 1.6 |
| Movement differential, Max. mm | 0.4 |
| Overtravel, Min. mm | 0.8 |
| Operating position, mm | 14.7±0.6 |

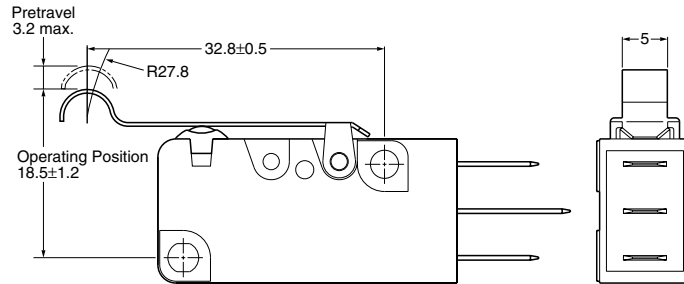
mm General tolerance: ± 0.25

Hinge lever



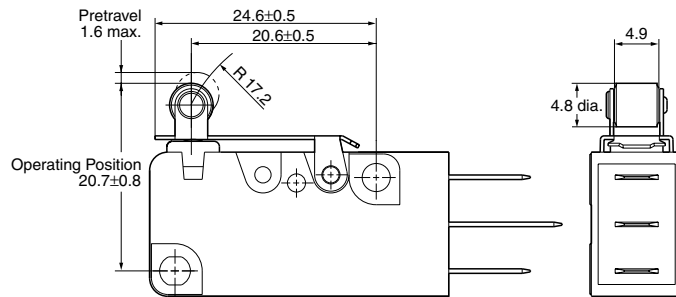
| | |
|--------------------------------|----------|
| Pretravel, Max. mm | 3.2 |
| Movement differential, Max. mm | 1.2 |
| Overtravel, Min. mm | 1.2 |
| Operating position, mm | 15.3±1.2 |

Simulated roller lever



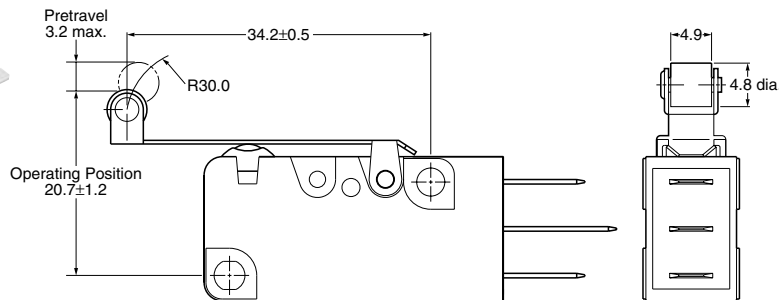
| | |
|--------------------------------|----------|
| Pretravel, Max. mm | 3.2 |
| Movement differential, Max. mm | 1.2 |
| Overtravel, Min. mm | 1.2 |
| Operating position, mm | 18.5±1.2 |

Short roller lever



| | |
|--------------------------------|----------|
| Pretravel, Max. mm | 1.6 |
| Movement differential, Max. mm | 0.5 |
| Overtravel, Min. mm | 0.8 |
| Operating position, mm | 20.7±0.8 |

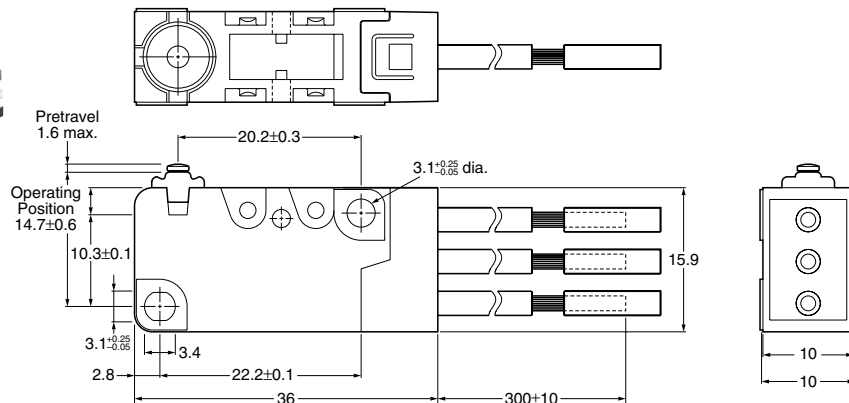
Roller lever



| | |
|--------------------------------|----------|
| Pretravel, Max. mm | 3.2 |
| Movement differential, Max. mm | 1.2 |
| Overtravel, Min. mm | 1.2 |
| Operating position, mm | 20.7±1.2 |

2. Immersion protected type

Wire Leads



Thickness of the lead wire:
 Standard type: 0.75mm²
 UL/CSA approved type:
 AWG #18
 Color of the lead wire
 COM ...black
 N.C.red
 N.O.white